

Comparison of characteristics important for survival in pork processing environments of *Salmonella* Typhimurium, S. Derby, S. Infantis and S. Brandenburg

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Abstract

Salmonella is the causative agent of salmonellosis. In general, salmonellae infections in humans are foodborne. In particular food products of animal origin are an important cause of salmonellosis. Epidemiological studies have shown that in Europe up to 15-20% of all human cases of salmonellosis were associated with consumption of pork. A study by the EFSA revealed that 10.3% of the slaughter pigs are positive for *Salmonella*. *Salmonella* infection in slaughter pigs can result in contamination of pork. Contamination can occur either directly by the content of the intestines, or indirectly by cross-contamination during the processing by contact with contaminated surfaces. Serovars frequently found on carcasses at the end of the slaughter process are S. Typhimurium, S. Derby, S. Infantis and S. Brandenburg. Knowledge on the survival of these serovars in processing environments is needed to develop better strategies for control in order to minimize the risk of cross-contamination during processing. S. Typhimurium is one of the most widely studied *Salmonella* serovars and several characteristics that are important for survival in pork processing environments have been described. However, not much is known about the survival characteristics of S. Derby, S. Infantis and S. Brandenburg. Therefore, biofilm formation, survival on stainless steel and at different water activities, and resistance against disinfection treatment, which are considered important characteristics for survival in pork processing environments, were analysed for these serovars, and compared with S. Typhimurium. Biofilm formation was analysed under different conditions and on different surfaces, which revealed that these factors do influence biofilm formation. Although all strains used in this study were isolated from slaughter pigs or in the pork processing environment, differences between and within the serovars were observed. This study provides a broad analysis and comparison of survival characteristics of *Salmonella* serovars in the pork processing environment and the obtained insights may support development of strategies for control of *Salmonella* in pork processing environments.

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